REMARKS

Applicant has carefully considered the Office action ("Action") and the references of record. Claims 1-50 are pending. Claims 1-28, 30-42, 44-48 and 50 were amended. No claims are canceled or withdrawn. Accordingly, claims 1-50 remain pending.

Withdrawal of the outstanding rejections is respectfully requested in view of the following remarks.

Specification Objections

Paragraph [0032] of the specification has been amended with a replacement paragraph, as suggested by the Action, to replace "(e.g., (e.g.," with "(e.g.,". Withdrawal to the objection to the disclosure is respectfully requested. Withdrawal of the objection to the specification is respectfully requested.

Specification Amendments

In addition to replacing paragraph [0032] as described in the immediately preceding section, paragraphs [0001], [0030], and [0032] have also been amended with respective replacement paragraphs. Specifically, **paragraph [0001]** of the specification has been amended via replacement paragraph to provide a US patent application serial number for the application titled "Reinforced Clustering of Multi-Type Data Objects for Search Term Suggestion". **Paragraph [0030]** of the specification was amended to provide antecedent basis for the terms "d", "q" and "k" used in one of the recited equations. Specifically the specification was amended to include "wherein d represents vector dimension, q represents a query,

k is a dimension index". Applicant respectfully submits that these "d", "q" and "k" term definitions are not new matter. This equation and corresponding term definitions were common in the art at the time of filing the subject patent application. Thus, a person of ordinary skill in the art at the time of invention would have reasonably ascertained that "d represents vector dimension, q represents a query, k is a dimension index".

Claim Objections

Claim 48 has been amended to correct the indicated claim language informality by replacing "means ti" with "means to".

35 USC §101 Rejections

Claims 15-28 stand rejected under 35 USC §101 as being directed to non-statutory subject matter. The preambles of claims 15-28 have been amended to more particularly point out that these claims are directed to statutory subject matter. For example, independent claim 15 has been amended to change "A computer-readable medium" to "A tangible computer-readable data storage medium". Additionally, to show appropriate antecedent basis to their respective base claim 15, and any intervening claim(s), the preambles of dependent claims 16-28 have been amended. For example, the preamble of claim 16 has been amended from "[a] computer-readable medium as recited in claim 15" to "[t]he computer-readable data storage medium of claim 15". In view of these amendments, withdrawal of the 35 USC §101 rejection of claims 15-28 is respectfully requested.

35 USC §112, First Paragraph, Rejections

Claims 9, 13, 23, 27, 31 and 41 stand rejected under 35 USC §112, first paragraph, as failing to comply with enablement requirement. Specifically, the Action indicates that "inverted document frequencies" are described in the specification, and not "inverted term frequencies. Applicant has amended claims 9, 13, 23, 27, 31 and 41 to change the phrase "inverted term" to "inverted document". The specification describes "inverted document frequencies"at paragraph [0029]. Withdrawal of the 35 USC §112, first paragraph, rejection to claims 9, 13, 23, 27, 31 and 41 is respectfully requested.

35 USC §112, Second Paragraph, Rejections

Claims 2-14, 16-28, 30-42 and 44-50 stand rejected under 35 USC §112, second paragraph, as being indefinite. Specifically, the Action indicates that there is insufficient antecedent basis for these dependent claims. In view of this, Applicant has amended the preambles of these dependent claims to more particularly point out that these dependent claims depend from a particular base or intervening claim. For example, the preambles of **claims 2-14** have been amended to change "A method" to "The method". The preambles of **claim 16-28** have been amended to change "A computer-readable medium" to "The computer-readable data storage medium". The preambles of **claims 30-42 and 44-50** have been amended to change "A computing device" to "The computing device".

In addressing **claim 4**, the Action indicates that the features of "d, q, k, and x" in lines 3 and 5 do not have sufficient antecedent basis. However, these terms, within the context of the equation of claim 4, were known to those of ordinary skill in the art in the time of art at filing a subject patent application. Although

Applicant need not teach that which is obvious to those in the art at the time of invention, Applicant has amended claim 4 to provide antecedent basis for features "d", "q" and "k". The specification has also been amended to specifically define these terms. Since a person of ordinary skill in the art at the time of filing this application would have reasonably ascertained the meanings of these terms within the context of the described equation, these amendments do not add any new matter to this patent application. With respect to the use of "x" in equation $w_{ij} = TF_{ij} x \log(N / DF_j)$ in claim 4, Applicant respectfully submits that a person of ordinary skill in the art at time of filing the subject application would reasonably ascertain that use of "x" in the equation represents a **multiplication operation**. Amended **claims 18 and 32** recite features similar to those of amended claim 4.

Withdrawal of the 35 USC §112, second paragraph, rejections of claims 2-14, 16-20, 30-42 and 44-50 is respectfully requested.

35 USC §102 Rejections

Claims 1-3, 5, 7-8, 12, 15-17, 19, 21-22, 26, 29-31, 33, 35-36, 40, 43-47 and 49-50 stand rejected under 35 USC §102(b) as being anticipated by US patent serial number 6,006,225 to *Bowman* et al ("*Bowman*"). However, the Manual of Patent Examining Procedure (M.P.E.P.) states that a claim is anticipated by a reference **only** if each and every element as set forth in the claim can be found in the reference and, furthermore, that the **identical** invention **must** be shown in as complete detail as is contained in the claim.

> A claim is anticipated **only** if each and every element set forth in the claim is found, either expressly or inherently described, in a single prior art reference. ... The **identical** invention **must** be shown in as **complete detail** as is contained in the ... claim.

(M.P.E.P. § 2131, subsection titled "TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY ELEMENT OF THE CLAIM", emphasis added). Each of the independent claims 1, 15, 29 and 43 include at least one feature not described by *Bowman*. For at least this reason, the rejections under 35 U.S.C. § 102 of the independent claims 1, 15, 29 and 43 should be withdrawn. Examples of claim features not found in *Bowman* are given below.

Independent claim 1 is directed to generating term clusters using term vector similarities. Specifically, claim 1 requires in part: *"generating term clusters as a function of calculated similarity of term vectors, each term vector being generated from search results associated with a set of high frequency of occurrence (FOO) historical queries previously submitted to a search engine"*. In addressing these claimed features, the Action asserts that they are described in the Abstract of *Bowman*, col. 3, lines 6-7, col. 9, lines 6-11, col. 13, lines 43-44, column 9, line 5, Fig. 4 (element 420), Fig. 7 (element 770), column 2, line 33, and Fig. 1 (element 135). Applicant respectfully disagrees. The Action's cited portions of *Bowman*, and the entire disclosure of *Bowman*, does not even include the words "cluster" and "vector", nor are **term clusters** based or **term vectors** even fairly suggested.

Instead, the Abstract of *Bowman* explicitly describes that "related terms are generated using query term correlation data which reflects the frequencies with which specific terms have previously appeared within the same query." This is accomplished using "**a lookup table** using an off-line process which parses **a query log file** (please see e.g., Fig. 4, element **420**, column 9, lines 18-25). The table is regenerated periodically from the most recent query submissions". Fig. 3 of *Bowman* clearly shows "sample log entries of the daily query log file" (column

3, lines 49-50). Clearly, *Bowman*'s query log file of Fig. 3 is not a term cluster based on term vectors. Additionally, Fig. 1 **(137)** and Fig. 5B show *Bowman*'s correlation lookup table. Unmistakably, *Bowman*'s correlation lookup tables (Fig. 1 and Fig. 5B) are not **term clusters** based on term vectors as a person of ordinary skill in the art at the time of filing Applicant's specification would have understood these terms. Paragraph [0031] of the specification even describes an exemplary **density-based clustering algorithm** to generate **term cluster(s)** based on a maximum distance between vectors in a cluster.

In view of the above, it is evident that when *Bowman* refers to generating and using query logs and correlation tables to identify related terms to refine a query, *Bowman* is clearly not describing "*generating term clusters as a function of calculated similarity of term vectors, each term vector being generated from search results associated with a set of high frequency of occurrence (FOO) historical queries previously submitted to a search engine*" comments claim 1 requires. For at least these reasons, *Bowman* does not set forth each and every element of claim 1 in as complete detail as the claim. For this reason alone, *Bowman* cannot anticipate claim 1.

Additionally, claim 1 recites "responsive to receiving a term/phrase from an entity, evaluating the term/phrase in view of terms/phrases in the term clusters to identify one or more related term suggestions". In addressing these claimed features, the Action asserts that they are described by *Bowman* at Fig. 7 (element 710), column 1, lines 31-32, column 15, lines 55-59, and column 4, lines 41-42. For the reasons already discussed above, the cited portions are completely silent respect to any description or fair suggestion of **term clusters**. Thus, Baumann

cannot describe "evaluating the term/phrase in view of terms/phrases in the term clusters", as claim 1 requires.

For each of the above reasons, *Bowman* does not anticipate claim 1. Withdrawal of the 35 USC §102(b) rejection of claim 1 is respectfully requested.

Independent claims 15, 29, and 43 include features similar to those described above with respect to claim 1. For the reasons already discussed with respect to claim 1, *Bowman* does not anticipate claims 15, 29 and 43. Withdrawal of the 35 USC §102(b) rejection of claims 15, 29 and 43 is respectfully requested.

Claims 2-3, 5, 7-8, 12, 16-17, 19, 21-22, 26, 30-31, 33, 35-36, 40, 42-47, and 49-50 depend from respective ones of allowable independent claims 1, 15, 29 and 43. Thus these dependent claims are not anticipated by *Bowman* at least for reasons based on their respective dependencies. Withdrawal of the 35 USC §102(b) rejection of these dependent claims is respectfully requested.

35 USC §103(a) Rejections

Claims 4, 6, 9-11, 13-14, 18, 20, 23-25, 27-28, 32, 34, 37-39, 41-42 and 48 stand rejected under 35 USC 103(a) as being unpatentable over *Bowman* in view of US publication serial number start numbers on 2004/0117189 to Bennett et al *(Bennett)*. However, the M.P.E.P. states that, to support the rejection of a claim under 35 U.S.C. § 103(a), each feature of each rejected claim must be taught or suggested by the applied references, and that each of the words describing the feature must be taken into account.

> To establish *prima facie* obviousness of a claimed invention, **all** the claim limitations **must** be taught or suggested by the prior art. ... **All** words in a claim **must** be considered in judging the patentability of that claim against the prior art.

(M.P.E.P. § 2143.03, emphasis added). Amended independent claims 1, 15, 29 and 43 are base claims of particular ones of rejected dependent claims 4, 6, 9-11, 13-14, 18, 20, 23-25, 27-28, 32, 34, 37-39, 41-42 and 48. Each of these amended independent claims includes at least one feature not taught or fairly suggested by *Bowman*, alone or in combination with *Bennett*, and are therefore patentable for at least this reason. Examples of independent claim features not found in *Bowman* in view of *Bennett* are now given.

Independent claim 1 is directed to generating term clusters using term vector similarities. Specifically, independent claim 1 requires in part: *"generating term clusters as a function of calculated similarity of term vectors, each term vector being generated from search results associated with a set of high frequency of occurrence (FOO) historical queries previously submitted to a search engine"*. In addressing these claimed features, the Action concluded that they were taught in the Abstract of *Bowman*, col. 3, lines 6-7, col. 9, lines 6-11, col. 13, lines 43-44, column 9, line 5, Fig. 4 (element 420), Fig. 7 (element 770), column 2, line 33, and Fig. 1 (element 135). However, for the reasons already discussed above with respect to claim 1, this conclusion is prima facie false, *Bowman* does not even include the words "cluster" and "vector", nor are **term clusters** based or **term vectors** even fairly suggested. Since all words in the claim have to be considered in judging the patentability of this claim against *Bowman*, it is clear that *Bowman* does not teach or suggest *"generating term clusters as a function of calculated similarity of term vectors"*, as claim 1 requires. Modifying the teachings of *Bowman* in view of the teachings of Bennett does not cure this clear deficiency of the primary reference, *Bowman*.

For instance, *Bennett* teaches "processing voice-based queries" to provide an answer "to a user's question" (Abstract and [0089]). As described in paragraphs [0089] through [0093] *Bennett* converts speech to a structured query language query to perform a full-text search and identify a record set of linguistically similar answers and stored questions. Then *Bennett* finds the best answer to the question by computing the semantic distance between the user query and stored questions, returning the best answer to the user (please also see the cited paragraphs [0361] through [0366] where these similarity determinations are made). Clearly, these teachings are completely silent with respect to any teaching or suggestion of *"generating term clusters"* as claim 1 requires. In fact, for purposes of distinguishing patentability of independent claim 1, and similarly as deficient as *Bowman*, *Bennett* also does not even include the words "cluster" or "clusters", nor are **term clusters** even fairly suggested by *Bennett's* teachings. Since all words in a claim must be considered when judging the patentability of claim 1 over *Bowman* in view of *Bennett*, it is clear that the cited combination does not teach or suggest clustering of any kind, especially *"generating term clusters as a function of calculated similarity of term vectors"*, as claim 1 requires. Thus, claim 1 is not obvious over the cited combination.

Withdrawal of the 35 USC §103(a) rejection of claim 4 is respectfully requested.

Dependent claims 4, 6, 9-11 and 13-14 also depend from claim 1. Thus these dependent claims are also allowable over the cited combination at least for reasons based on their respective dependencies. Withdrawal of the 35 USC §103(a) rejection of claims 4, 6, 9-11 and 13-14 is respectfully requested.

Dependent claims 18, 20, 23-25, 27-28, 32, 34, 37-39, 41-42 and 48 respectively depend from one of the amended independent claims 15, 29 and 43. Each of these independent claims recites features similar to those of claim 1. For the reasons already discussed above with respect claim 1, these similar features of independent claims 15, 29 and 43 are not obvious over the cited combination of *Bowman* in view of *Bennett*. Accordingly, and at least for reasons based on these respective dependencies, the features of dependent claims 18, 20, 23-25, 27-28, 32, 34, 37-39, 41-42 and 48 are not obvious over the cited combination.

Withdrawal of the 35 USC §103(a) rejections of depending claims 18, 20, 23-25, 27-28, 32, 34, 37-39, 41-42 and 48 is respectfully requested.

Conclusion

Applicant trusts that the application can now proceed to grant. However, if there are points which the Examiner wishes to raise, which could be dealt with over the telephone, we should be grateful if the Examiner would contact the undersigned. If the Examiner contemplates refusing this application, we would appreciate the opportunity of an informal interview either by telephone or in person before hand.

Respectfully Submitted,

Dated: <u>February 2, 2007</u>   By: <u>/ Brian G. Hart Reg. No. 44421 /</u>

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